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      (FILE 'USPAT' ENTERED AT 11:10:06 ON 09 MAY 1999)
L1          6312 S (CABLE OR TELEVISION# OR TV) (2A) (SCHEDUL? OR GUIDE#)
L2          3172 S PROGRAM? (2A) (SCHEDUL? OR GUIDE#)
L3           131 S 348/906/CLS
L4           107 S (L1 OR L2) AND L3
L5          2312 S (CONFIGUR? OR RECONFIGUR?) (2A) (QUEUE# OR FIFO# OR BUFF
ER?
L6             0 S L4 AND L5
L7             0 S L3 AND L5
L8          9191 S L1 OR L2
L9            46 S L8 AND L5
L10         3919 S (CONFIGUR? OR RECONFIGUR? OR REASSIGN?) (4A) (QUEUE# OR
FIF
L11           80 S (L8 OR L3) AND L10
L12            1 S L10 (P) L8
L13        22007 S (CONFIGUR? OR RECONFIGUR? OR REASSIGN?) (4A) (MEMORY OR
MEM
L14           20 S L8 (P) L13
L15           94 S L8 (4A) (CONFIGUR? OR RECONFIGUR?)
L16            0 S L15/TI
L17            6 S L15/TI,AB
L18          300 S (ON-SCREEN OR ONSCREEN) (A) PROGRAM?
L19            3 S L18 AND L10
L20            1 S 5742677/PN
L21            3 S (5550576 OR 5388097 OR 5521631)/PN
L22           45 S L8 (2A) (INTERACTIVE OR INTER-ACTIVE)
L23            9 S L22/TI,AB
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2. 5,880,768, Mar. 9, 1999, **Interactive program guide** systems and processes; Thomas R. Lemmons, et al., 348/1, 10, 906; 455/6.2 [IMAGE AVAILABLE]

US PAT NO: 5,880,768 [IMAGE AVAILABLE] L23: 2 of 9

ABSTRACT:
Interactive program guide systems and related processes are provided which can automatically tune a television, or program a VCR, based on program selections made from program schedule information displayed on a television or other suitable video monitor. The **interactive program guide** is preferably implemented using a microprocessor-controlled set-top box that is coupled to the viewer's television set. The set-top box receives program schedule information and software from a headend telecasting center. Preferably, program schedule information for the current day and at least six subsequent days is stored in a memory within the set-top box. The **interactive program guide** provides a display mode for allowing the viewer to apply a restrictive search selection criterion and a nonrestrictive sort attribute to the program schedule information.

3. 5,850,218, Dec. 15, 1998, **Inter-active program guide** with default selection control; Mike L. LaJoie, et al., 345/327; 348/13, 906 [IMAGE AVAILABLE]

US PAT NO: 5,850,218 [IMAGE AVAILABLE] L23: 3 of 9

ABSTRACT:
A system and method are provided for providing a full service cable television system. The cable system incorporates a digital and analog transmission architecture capable of delivering a high number of high quality television programs, advanced cable services, and online services to a subscriber's home. The cable system comprises a cable headend, at least one fiber transport, at least one distribution hub, at least one hybrid fiber coax plant, and a plurality of set-top terminals. Programs and services are transmitted to the set-top terminals in both digital and analog formats to maintain downward compatibility with existing systems. The set-top terminal incorporates a central processing unit, a unified memory architecture, a memory management unit, communications circuitry, I/O control circuitry, and audio and video output circuitry. Through these components the set-top terminal provides advanced cable services such as a comprehensive channel navigator, an **interactive program guide**, Impulse Pay-Per-View activation, Near-Video-On-Demand and Video-On-Demand programming, and advanced configuration controls. The set-top terminal also provides online services such as World Wide Web browsing, Internet E-Mail, and Home Shopping.

4. 5,844,620, Dec. 1, 1998, Method and apparatus for displaying an **interactive television program guide**; Misti Coleman, et al., 348/461, 10, 906 [IMAGE AVAILABLE]

US PAT NO: 5,844,620 [IMAGE AVAILABLE] L23: 4 of 9

ABSTRACT:
An interactive on-screen visual interface guides a user through a menu of individual events available via an information network while allowing continuity of viewing of the current channel. The invention is especially applicable to the provision of an **interactive program guide**

(IPG) for events such as television programs, movies, concerts, sporting events, interactive services, and the like which are available over a digital broadcast satellite (DBS) system or a cable television (CATV) network. A user can easily switch back and forth between a partial screen guide and a full-screen guide by a command entered, for example, on a hand-held remote control. The guide can be switched back to a non-display status. The guide's graphics can also be blended with video being viewed. The primary viewing channel can be resized to allow the user to view all of the primary channel while also accessing the guide. A trickle data stream provides programming information for a current time period, e.g., the next forty-eight hours, and is stored in a local memory for immediate access. A demand data stream provides programming information for a future time period, e.g., one week beyond the current period, and is acquired on a real time basis in response to a subscriber's request for future scheduling information.

5. 5,815,145, Sep. 29, 1998, System and method for displaying a **program guide** for an **interactive** televideo system; Joseph H. Matthews, III, 345/327; 348/7, 12, 13, 564, 906; 455/4.2, 5.1 [IMAGE AVAILABLE]

US PAT NO: 5,815,145 [IMAGE AVAILABLE] L23: 5 of 9

ABSTRACT:
The present invention includes a method of providing programming information to viewers using an interactive television or televideo (IT) system. The programming information includes video display images, and preferably a multi-frame video segment of or relating to the programming on at least one of the selected channels. In a preferred embodiment, the IT system obtains programming images corresponding to programming available on selected channels during a selected programming schedule period. Preferably, at least one of the programming images includes a video segment relating to programming available on one of the selected channels, and the remaining programming images include single frame images relating to the programming available on the remaining ones of the selected channels. The programming images for the selected programming are rendered simultaneously on the video display set of the selected viewer station.

6. 5,801,753, Sep. 1, 1998, Method and apparatus for providing an interactive guide to events available on an information network; Mark K. Eyer, et al., 348/13, 17, 473, 906 [IMAGE AVAILABLE]

US PAT NO: 5,801,753 [IMAGE AVAILABLE] L23: 6 of 9

ABSTRACT:
Apparatus and methods are provided for implementing an **interactive program guide** on an information network. A plurality of database pages are communicated over the information network. Each page corresponds to a time slot over which events are available on the network. Schedule data for each event to be included in the interactive guide is inserted into the database page for the time slot during which the event is to be provided. The database pages are transmitted via the information network at a transmission rate selected to enable the recovery of a particular database page within a predetermined acquisition time limit, for retrieval of schedule data for the time represented by that page. Schedule information for a current time period can be provided in a trickle data stream with future scheduling information provided in a demand data stream. The demand data stream is transmitted at a substantially higher rate than the trickle data stream. Data from the trickle stream is downloaded into memory at the decoder for instantaneous display. Data from the demand data stream is accessible on an as needed basis by retrieving only that data necessary for the display of scheduling information for a desired time slot.

7. 5,630,119, May 13, 1997, System and method for displaying program listings in an **interactive** electronic **program guide**; Nivos C. Aristides, et al., 707/1; 348/7, 13, 906 [IMAGE AVAILABLE]

US PAT NO: 5,630,119 [IMAGE AVAILABLE] L23: 7 of 9

ABSTRACT:
Disclosed herein is an interactive entertainment distribution network including a headend which is connected to provide programs to a plurality of user interface units in individual homes. The user interface units are configured to run electronic program guides for displaying available programs categorized by discrete time slots. Each of the programs has a scheduled time period which occupies at least a portion of one or more of the discrete time slots. The headend maintains a database with a plurality of program data records. Each program data record is indexed by one of a plurality of bucket numbers. The bucket numbers correspond respectively to the plurality of discrete time slots. Each particular program is represented by a program data record and associated bucket number for each of the one or more discrete time slots which the program occupies. The electronic program guide requests programming information from the headend by specifying one or more bucket numbers to the headend.

8. 5,592,551, Jan. 7, 1997, Method and apparatus for providing **interactive** electronic **programming guide**; David B. Lett, et al., 380/20; 348/3, 7, 12, 13, 906 [IMAGE AVAILABLE]

US PAT NO: 5,592,551 [IMAGE AVAILABLE] L23: 8 of 9

ABSTRACT:
A subscription television system is provided that transmits a plurality of television signals to a plurality of subscribers. The television signals include pay-per-view programs (purchased by feature) or near-video-on-demand programs (purchased for a period of time for unlimited viewing) that are provided only to subscribers that purchase the programs. Data representing an electronic programming guide is also transmitted. The electronic programming guide can be displayed by a subscriber terminal at the subscriber's location. The electronic programming guide is a grid listing television programs by date, time and channel. A subscriber can select programs for watching or recording from the electronic program guide. Moreover, the subscriber can purchase pay-per-view or near-video-on-demand programs from the electronic programming guide.

9. 5,585,838, Dec. 17, 1996, Program time guide; Frank A. Lawler, et al., 348/13; 345/327; 348/12, 906; 455/5.1 [IMAGE AVAILABLE]

US PAT NO: 5,585,838 [IMAGE AVAILABLE] L23: 9 of 9

ABSTRACT:
A **program** time **guide** for an **interactive** viewing system allows a user to control the time and channels for which program information is displayed. The user can navigate through the program time guide to identify and select desired programs. The program time guide displays information for various types and sources of programming by assigning each program source a channel number. Selecting a program on a particular channel causes the system to tune to an associated frequency to receive video signals, launch a computer executed application which generates displayed information, or to perform some other activity associated with that channel or program.

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L4           107 S (L1 OR L2) AND L3
L5          2312 S (CONFIGUR? OR RECONFIGUR?) (2A) (QUEUE# OR FIFO# OR BUFF
ER?
L6             0 S L4 AND L5
L7             0 S L3 AND L5
L8          9191 S L1 OR L2
L9            46 S L8 AND L5

=> d cit,ab,kwic


1.  5,889,949, Mar. 30, 1999, Processing system with memory arbitrating
between memory access requests in a set top box; Gordon A. Charles,
709/214 [IMAGE AVAILABLE]

US PAT NO:      5,889,949 [IMAGE AVAILABLE]              L9: 1 of 46

ABSTRACT:
A method and apparatus for providing memory arbitration which allows
multiple hardware functions implemented in a single ASIC to utilize a
single shared memory unit or multiple shared memory units. The memory
arbitration technique establishes a priority among multiple memory access
requesters and is particularly well-suited for use in a set top box
processing system. A plurality of memory access requests are received
from a plurality of processing elements in a set top box processing
system. The processing elements include a transport stream demultiplexer,
a host central processing unit and a graphics processor. The processing
elements are permitted to access a shared memory in accordance with an
established priority. The established priority assigns a higher priority
to the graphics processor than to the host central processing unit, and
may be in the order of graphics processor, transport stream
demultiplexer, and central processing unit.

SUMMARY:

BSUM(6)

 Multimedia . . . processing of video, audio and other data, audio and
video demultiplexing and decompression, graphics overlay processing for
use in electronic program guides and the like, entitlement
control for video on demand (VOD), near video on demand (NVOD) and
pay-per-view (PPV) applications, and. . .

DETDESC:

DETD(29)

 The . . . 10. For example, the IR transmitter 85 may be used to
communicate with a VCR in conjunction with an electronic programming
guide to facilitate VCR programming.

DETDESC:
```

In . . . which the receiver 405 retrieves from the receive ring portion 410 of the DRAM 40. As noted above, the cell **buffers** may be **configured** to include a header and a data portion in accordance with the above described MBUF data structure format.

15. 5,742,677, Apr. 21, 1998, Information terminal having **reconfigurable memory**; Howard G. Pinder, et al., 380/4, 21, 25 [IMAGE AVAILABLE]

US PAT NO: 5,742,677 [IMAGE AVAILABLE] L15: 15 of 27

ABSTRACT:
An information terminal includes a secure microprocessor and secure non-volatile memory. Data such as authorization data and other service provider related data for subscription information services are certified as to source, and portions thereof decrypted as necessary by the secure processor according to a service provider key and loaded into secure non-volatile memory. The secure data is loaded by multiple service providers or by subscribers themselves, each service provider being adaptably allocated a number of non-volatile storage cells of predetermined length. In this manner, scarce non-volatile memory resources may be conserved and yet made accessible to multiple information service providers upon demand or as requirements change. Once certified by a trusted entity, several information service providers may individually change or modify the **reconfigurable memory** of the present invention by remote, addressed communication without the intervention of head-end apparatus. Moreover, preferably the service provider signs messages, and may privately encrypt portions of the message, including the authorization data, with its own key and the encrypted data is certified as to source and decrypted upon receipt at the secure microprocessor. In this manner, authorization transactions are protected from service pirates. Moreover, in a similar manner, service acceptance data, such as impulse pay-per-view data, may be signed by an electronic signature of the subscriber, privately encrypted as appropriate with a subscriber provided key and returned to the service provider. Once the service acceptance data is successfully received at a billing computer, the data is erased from secure terminal memory.
TITLE: Information terminal having **reconfigurable memory**

ABSTRACT:
An . . . or as requirements change. Once certified by a trusted entity, several information service providers may individually change or modify the **reconfigurable memory** of the present invention by remote, addressed communication without the intervention of head-end apparatus. Moreover, preferably the service provider signs. . .

SUMMARY:

BSUM(3)

The present invention generally relates to an information terminal having a **reconfigurable memory** and, more particularly, to a subscription information system including such a subscriber terminal unit with a secure authorization **memory** that is **reconfigurable** under control of multiple information service providers via a central location.

SUMMARY:

BSUM(17)

Thus, . . . receiving commands and data from an entity and from information providers, a processor for interpreting the commands and data, and **reconfigurable memory**, responsive to the processor,

adapted to store a plurality of blocks of data in memory blocks depending on the requirements. . .

DRAWING DESC:

DRWD(8)

FIG. 7 is a chart showing the specific **memory configuration** example of FIG. 6 and alternative examples.

DETDESC:

DETD(8)

FIGS. 2A, 2B, 2C and 2D are block diagrams of a subscription **television** system 100 in which the instant invention is incorporated, analog, digital or a combination or analog and digital technologies. It will of course be apparent that the instant invention may be applied to information systems other than a subscription **television** system and the invention is not limited in this respect. A subscription **television** system 100 provides information to a plurality of subscriber locations, e.g., 120-1, . . . , 120-m (see FIG. 2C).. . . digital video, digital audio, text services such as news articles, sports scores, stock market quotations, weather reports, electronic messages, electronic **program guides**, database information, software including game programs, and wide area network data. Referring to FIG. 2A, subscription **television** system 100 includes a plurality of information providers 114-1, . . . , 114-n, each of which may supply one. . . of the information types identified above. For example, information provider 114-2 includes an information source 115 for providing an analog **television** signal to a transmitter 118. Transmitter 118 is coupled to a satellite uplink 121 which transmits an analog **television** signal 122-2. Information providers 114-1 and 114-3 each provide digital information from an information source 115 to a respective encoder. . . of information, e.g., a plurality of different game programs or different types of text services or a plurality of digital **television** or audio programs, encoder 116 may multiplex the information to generate a multiplexed data stream for transmission. The data stream. . . a satellite link, the invention is not limited in this respect. Accordingly, this link may, for example, be a coaxial **cable**, a telephone network, a satellite system, a radio frequency (RF) link, or an optical fiber or any combination thereof. Further,. . .

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L4           107 S (L1 OR L2) AND L3
L5          2312 S (CONFIGUR? OR RECONFIGUR?) (2A) (QUEUE# OR FIFO# OR BUFF
ER?
L6             0 S L4 AND L5
L7             0 S L3 AND L5
L8          9191 S L1 OR L2
L9            46 S L8 AND L5
L10         3919 S (CONFIGUR? OR RECONFIGUR? OR REASSIGN?) (4A) (QUEUE# OR
FIF
L11           80 S (L8 OR L3) AND L10
L12            1 S L10 (P) L8
L13        22007 S (CONFIGUR? OR RECONFIGUR? OR REASSIGN?) (4A) (MEMORY OR
MEM
L14           20 S L8 (P) L13
L15           94 S L8 (4A) (CONFIGUR? OR RECONFIGUR?)
L16            0 S L15/TI
L17            6 S L15/TI,AB

=> d 1,3,4 cit,ab
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1. 5,886,690, Mar. 23, 1999, Program schedule user interface; Russell L. Pond, et al., 345/327, 334, 352 [IMAGE AVAILABLE]

US PAT NO: 5,886,690 [IMAGE AVAILABLE] L17: 1 of 6

ABSTRACT:
A program schedule user interface for use in television applications, such as cable or satellite broadcast programming. The interface allows for display of program scheduled information in full screen or minimized mode and provides additional useful **configurations** of the **program schedule** information.

3. 5,801,747, Sep. 1, 1998, Method and apparatus for creating a television viewer profile; Karen Bedard, 348/1, 10 [IMAGE AVAILABLE]

US PAT NO: 5,801,747 [IMAGE AVAILABLE] L17: 3 of 6

ABSTRACT:
A method and apparatus are disclosed for monitoring television viewing activity to determine preferred categories of programming and preferred channels of a viewer. To facilitate viewer access to preferred programming, the display of an electronic **program guide** may be **configured** in accordance with the monitored viewing activity to provide fast access to the preferred programming. The monitored viewing activity may also be used to provide a lock-out feature to prevent or limit the viewing of specified channels or categories of programming, or to identify and provide information of interest from the internet. In yet another embodiment of the invention, a viewer may automatically circulate through his or her preferred programming, as determined by monitoring the viewing activity of that viewer.

4. 5,630,119, May 13, 1997, System and method for displaying program

listings in an interactive electronic program guide; Phivos C. Aristides, et al., 707/1; 348/7[redacted]3, 906 [IMAGE AVAILABLE]

US PAT NO: 5,630,119 [IMAGE AVAILABLE] L17: 4 of 6

ABSTRACT:
Disclosed herein is an interactive entertainment distribution network including a headend which is connected to provide programs to a plurality of user interface units in individual homes. The user interface units are **configured** to run electronic **program guides** for displaying available programs categorized by discrete time slots. Each of the programs has a scheduled time period which occupies at least a portion of one or more of the discrete time slots. The headend maintains a database with a plurality of program data records. Each program data record is indexed by one of a plurality of bucket numbers. The bucket numbers correspond respectively to the plurality of discrete time slots. Each particular program is represented by a program data record and associated bucket number for each of the one or more discrete time slots which the program occupies. The electronic program guide requests programming information from the headend by specifying one or more bucket numbers to the headend.

Therefore, the viewer profile will (steps 322 and 324) move up to the next higher entry 202 in viewer profile array 200, so long as the viewer profile is not already at the top of array 200. The viewer profile will then decrement (step 316) and examine (step 318) total viewing counter 204 for the next higher entry 202. The viewer profile will continue in this manner (steps 322, 324, 316, and 318) until it has either visited every entry 202 in viewer profile 200 or decremented a total viewing units counter for a particular entry to zero. If the viewer profile traverses the entire viewer profile array 200 without having decremented the total viewing unit counter 204 to zero for any entry 202, the viewer profile will abandon (step 326) its attempt to add new entry 202 to viewer profile array 200.

In this manner, a viewer profile array 200 is created wherein the order of entries 202 indicates which channels have been most recently viewed, while the corresponding counters 204 and 206 indicate the length and frequency of visits to the various channels in array 200.

In yet another alternative exemplary embodiment of the present invention, instead of performing only one cycle (i.e., one visit to each entry 202 in viewer profile array 200 in an attempt to add a new entry 202 to array 200), the viewer profile may make multiple cycles through array 200, where, for example, the number of cycles may be dependent upon the number of viewing units that the channel represented by new entry 202 has been viewed. This alternative embodiment allows the relevance of potential new entry 202 to be weighed against the relevance of existing entries 202 on the basis of the amount of time the corresponding channels have been viewed during the viewer profile collection period. This may be helpful, for example, in the event that potential new entry 202 is viewed for a substantial period of time (i.e., several viewing units) while the total viewing unit counters 204 of the current entries 202 are much lower, for example, two viewing units. Thus, this alternative embodiment ensures that a heavily-viewed new entry 202 is not arbitrarily dismissed as insignificant.

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ER?
L6             0 S L4 AND L5
L7             0 S L3 AND L5
L8          9191 S L1 OR L2
L9            46 S L8 AND L5
L10         3919 S (CONFIGUR? OR RECONFIGUR? OR REASSIGN?) (4A) (QUEUE# OR
FIF
L11           80 S (L8 OR L3) AND L10
L12            1 S L10 (P) L8
L13        22007 S (CONFIGUR? OR RECONFIGUR? OR REASSIGN?) (4A) (MEMORY OR
MEM
L14           20 S L8 (P) L13
L15           94 S L8 (4A) (CONFIGUR? OR RECONFIGUR?)
L16            0 S L15/TI
L17            6 S L15/TI,AB
L18          300 S (ON-SCREEN OR ONSCREEN) (A) PROGRAM?
L19            3 S L18 AND L10
L20            1 S 5742677/PN
L21            3 S (5550576 OR 5388097 OR 5521631)/PN

=> d l11 14 cit,ab,kwic
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14. 5,805,821, Sep. 8, 1998, Video optimized media streamer user interface employing non-blocking switching to achieve isochronous data transfers; Ashok Raj Saxena, et al., 395/200.61; 709/213, 232, 249; 710/6, 129, 131 [IMAGE AVAILABLE]

US PAT NO: 5,805,821 [IMAGE AVAILABLE] L11: 14 of 80

ABSTRACT:
A media streamer (10) includes at least one control node (18); a user interface (64, 65, 66) having an output coupled to the at least one control node; at least one storage node (16, 17) for storing a digital representation of at least one video presentation; and a plurality of communication nodes (14) each having an input port for receiving a digital representation of at least one video presentation therefrom. The video presentation requires a time T to present in its entirety, and is stored as a plurality of N data blocks. Each data block stores data corresponding to a T/N period of the video presentation. Each communication nodes further has a plurality of output ports for outputting a digital representation. A circuit switch (12) is connected between the at least one storage node and the input ports of communication nodes for coupling one or more input ports to the at least one storage node. The user interface includes a capability for specifying commands for execution, and the at least one control node is responsive to individual ones of the commands for controlling at least one of the at least one storage node and at least one of the plurality of communication nodes, in cooperation with the circuit switch, so as to execute a function associated with individual ones of the commands. The commands may include video cassette recorder-like commands that include commands

selected from a group that includes a Load command, an Eject command, a Play command, a Slo[redacted]ommand, a Fast Forward command[redacted] Pause command, a Stop command, a Rew[redacted]d command, and a Mute command. The commands may also include commands selected from a group that includes a Play List command, a Play Length command, and a Batch command. A synchronous application program interface (API) is provided for coupling, via the user interface, a user application program to the at least one control node. The API includes Remote Procedure Call (RPC) procedures.

DETDESC:

DETD(194)

Batch . . . video control commands. For example, in the broadcast industry, a command script can be prepared in advance to include pre-recorded, **scheduled programs** for an extended period of time. At the scheduled start time, the command script is executed by a single batch. . .

DETDESC:

DETD(394)

Digital . . . large buffer 214 for video data to allow full utilization of the SCSI burst mode data transfer process. An exemplary **configuration** would be one **buffer** 214 of 768K, handled by local logic as a wrap-around circular buffer. Circular buffers are preferred to dynamically handle varying. . .

F. Video Optimized Digital Memory Allocation

Digital video data has attributes unlike those of normal data processing data in that it is non-random, that is sequential, large, and time critical rather than content critical. Multiple streams of data must be delivered at high bit rates, requiring all nonessential overhead to be minimized in the data path. Careful buffer management is required to maximize the efficiency and capacity of the media streamer 10. Memory allocation, deallocation, and access are key elements in this process, and improper usage can result in memory fragmentation, decreased efficiency, and delayed or corrupted video data.

The media streamer 10 of this invention employs a memory allocation procedure which allows high level applications to allocate and deallocate non-swappable, page aligned, contiguous memory segments (blocks) for digital video data. The procedure provides a simple, high level interface to video transmission applications and utilizes low level operating system modules and code segments to allocate memory blocks in the requested size. The memory blocks are contiguous and fixed in physical memory, eliminating the delays or corruption possible from virtual memory swapping or paging, and the complexity of having to implement gather/scatter routines in the data transmission software.

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L7             0 S L3 AND L5
L8          9191 S L1 OR L2
L9            46 S L8 AND L5
L10         3919 S (CONFIGUR? OR RECONFIGUR? OR REASSIGN?) (4A) (QUEUE# OR
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L11           80 S (L8 OR L3) AND L10
L12            1 S L10 (P) L8
L13        22007 S (CONFIGUR? OR RECONFIGUR? OR REASSIGN?) (4A) (MEMORY OR
MEM
L14           20 S L8 (P) L13

=> d cit 1-
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1. 5,841,772, Nov. 24, 1998, ATM communication system interconnect/termination unit; Thomas Daniel, et al., 370/395, 412 [IMAGE AVAILABLE]

2. 5,822,123, Oct. 13, 1998, Electronic television program guide schedule system and method with pop-up hints; Bruce Davis, et al., 348/564; 345/336, 338; 348/569, 906 [IMAGE AVAILABLE]

3. 5,809,204, Sep. 15, 1998, User interface for television schedule system; Patrick Young, et al., 386/83; 348/13, 734, 906 [IMAGE AVAILABLE]

4. 5,790,198, Aug. 4, 1998, Television schedule information transmission and utilization system and process; John H. Roop, et al., 348/460, 6, 467, 473, 906 [IMAGE AVAILABLE]

5. 5,781,246, Jul. 14, 1998, Electronic television program guide schedule system and method; Jerry Alten, et al., 348/569, 564, 570, 731, 906 [IMAGE AVAILABLE]

6. 5,730,604, Mar. 24, 1998, Method and apparatus for correlating educational requirements; Michael E. Jay, et al., 434/365, 169, 219, 307R, 322 [IMAGE AVAILABLE]

7. 5,629,733, May 13, 1997, Electronic television program guide schedule system and method with display and search of program listings by title; Roger Youman, et al., 348/7; 345/146, 327, 902; 348/13; 455/4.2 [IMAGE AVAILABLE]

8. 5,619,274, Apr. 8, 1997, Television schedule information transmission and utilization system and process; John H. Roop, et al., 348/461, 6, 478, 906; 455/3.2 [IMAGE AVAILABLE]

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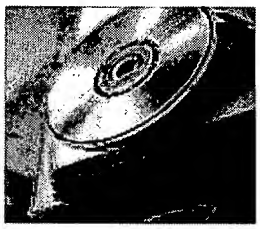

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1 2 [Next]

Supporting video on demand

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Abstract:

We examine I/O scheduling strategies for maximizing the number of concurrent streams that can be supported by a VOD system implemented using current midrange device technologies. The overall VOD system is modeled as a collection of resources, characterized by their bandwidths and capacities. We determine limits on the maximum number of concurrent streams possible for various I/O subsystem configurations. We then propose several practical I/O scheduling algorithms and determine the amount of memory required at both the disk and server to support the limiting number of concurrent streams. An admission control policy is proposed for limited memory environments. Finally, we discuss client request (workload) distributions and data placement strategies and their effects on the number of concurrent streams and memory buffer requirements. If the client video requests are not badly skewed (as quantified below) and if sufficient memory is available on both the disk on-board cache and server, our practical algorithms can support the maximum number of concurrent streams allowed by the I/O subsystem configuration.

Subject Terms:

scheduling; interactive television; interactive video; magnetic disc storage; network servers; cache storage; video on demand; I/O scheduling; concurrent streams; VOD system; midrange device technologies; resources; bandwidths; capacities; I/O subsystem configurations; practical I/O scheduling algorithms; admission control policy; server memory; disk memory; client request distributions; workload distributions; data placement strategies; memory buffer requirements; client video requests; cache

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Help

Making a cost-effective storage server for broadcasting digital video services

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Dept. of Eng. Sci., Nat. Cheng Kung Univ., Tainan, Taiwan

This Paper Appears in :
Broadcasting, IEEE Transactions on

on Pages: 300 - 308

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References Cited: 16
CODEN: IETBAC
Accession Number: 6023542

Abstract:

Near video-on-demand (near-VoD) system, which broadcasts popular movies on a number of channels according to a predetermined program schedule, is regarded as one of the practical applications through a CATV network. A broadcasting video storage server is proposed to support this application with flexible configuration and management functions, low system construction cost, and high efficiency. A generic file layout and a retrieval scheme are presented to accommodate variant types of videos with single, multiple, constant, and variable bit rates. Simulation results show that our broadcasting storage server can reduce by 10-20% the system construction cost than the previous approaches.

Subject Terms:

digital television; cost-effective storage server; digital video services broadcasting; near video-on-demand system; near-VoD; movies; CATV network; broadcasting video storage server; configuration functions; management functions; low system construction cost; high efficiency; generic file layout; retrieval scheme; variable bit rate; constant bit rate; multiple bit rates; simulation results; multiple hard disks